

PILOT UNIT EVALUATION OF EXXON DONOR SOLVENT (EDS) PROGRAM COALS. G. H. Anderson,  
S. J. Hsia and K. L. Trachte. Exxon Research and Engineering Company, P. O. Box  
4255, Baytown, Texas 77520.

Two Recycle Coal Liquefaction Units (RCLU's) are employed as a research and development tool to evaluate the performance of the Exxon Donor Solvent (EDS) coal liquefaction process with various program coals. These small (50 pounds-per-day and 100 pounds-per-day) integrated, continuous flow units with solvent recycle are used to evaluate new coals, investigate process modifications and conduct process variable studies. The RCLU's have been used to generate data for overall process yields and to provide information on operability trends for a variety of coals ranging in rank from lignitic through subbituminous to bituminous. We have found that the EDS process can be operated successfully throughout this range of coal rank. Optimum yields, and the conditions at which these yields are achieved, are strongly dependent on the specific coal. Recent process improvement operations have shown significant improvements in total liquid yield, as well as a lighter liquid product slate may be achieved. Operability trends are related to coal rank, with generally better operability obtained with higher rank coals. Yield and operability information from the RCLU's are used to select preferred operating conditions for the larger (one ton-per-day and 250 ton-per-day) pilot plants in preparation for future commercial operation.